

PAMPHLET No. 8.

DOMINION OF CANADA.

CENTRAL EXPERIMENTAL FARM.

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THE PRESERVATION OF FRUITS FOR EXHIBITION PURPOSES.

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For the past twenty-five years experiments have been carried on by the officers of the Central Experimental Farm in the preservation of fruits for exhibition purposes. The first experiments were made immediately prior to the time of the Indian and Colonial Exhibition, London, England, in 1886, when a large number of antiseptic fluids were tried and a collection of 1,000 jars, from one quart to five gallons each, filled with various fruits, preserved in the most successful of these solutions, were exhibited. This exhibit was prepared by Dr. Wm. Saunders, C.M.G., Director, Experimental Farms, who attended the exhibition and with the material erected a trophy which attracted much attention. Subsequent to this, many exhibits of preserved fruits have been made at provincial and other large exhibitions, using the formulæ originated at the Experimental Farms.

During more recent years, the experiments have been conducted by the Chemical Division with the co-operation and assistance of the Horticultural Division and as a result, several new and satisfactory fluids have been added to the list. In the course of this investigation, the merits of more than fifty different solutions with various kinds of fruits have been tested, and that the problem is a difficult one will be apparent from the fact that more than 75 per cent of these fluids have been found unsatisfactory. The object has been to find fluids that would not only preserve the fruit from spoiling but keep it, as far as possible, with its natural colour and size.

Among the more successful of the fluids examined, the following stand to-day at the head of the list; after a careful and thorough testing, extending at least over five years, they have all been found very fairly satisfactory, and can, therefore, be recommended to those who may have occasion to exhibit fruit several months after it has been picked.

In the preparation of these fluids, it is desirable to employ distilled water, usually obtainable from druggists at a small cost. The alcohol used in these formulæ may be the ordinary spirits of wine.

FLUID No. 1.—FORMALDEHYDE.

Formaldehyde (formalin).....	1 part.
Alcohol.....	5 parts.
Water, to make.....	50 "

To prepare one gallon of the fluid 3½ ounces of formaldehyde and 16 ounces of alcohol will be required, the remainder of the gallon to be made up with water.

The addition of a volume of hydrogen peroxide equal to that of the formaldehyde has been found to somewhat enhance the value of this fluid for red fruits.

FLUID No. 2.—BORIC ACID.

Boric (boracic) acid.	1 part.
Alcohol.	5 parts.
Water, to make.	50 "

For one gallon, 3½ ounces of boric acid and 16 ounces of alcohol will be required.

The powdered form of boric acid is the most convenient to use. There is no necessity to employ hot water, but stirring should be continued until complete solution is effected.

FLUID No. 3.—ZINC CHLORIDE.

Zinc chloride.	3 parts.
Alcohol.	10 "
Water, to make.	100 "

For one gallon of fluid, 5 ounces of zinc chloride and 16 ounces of alcohol will be required.

Zinc chloride, of good quality, passes readily into solution; any white, flocculent precipitate that may appear is allowed to settle out and the clear fluid decanted.

FLUID No. 4.—SULPHUROUS ACID.

Sulphurous acid.	1 part.
Alcohol.	1 "
Water, to make.	10 parts.

For one gallon, 16 ounces each of sulphurous acid and of alcohol will be required.

FLUID No. 5.—COPPER SULPHATE.

Copper sulphate.	2 parts.
Alcohol.	10 "
Water, to make.	100 "

For one gallon, 3½ ounces of copper sulphate and 16 ounces of alcohol will be required.

To facilitate solution, powder the copper sulphate (bluestone) and dissolve it in a small quantity of hot water; when cold, add the alcohol and the remainder of the water to the required volume.

FLUID No. 6.—ALUM.

Alum.	5 parts.
Alcohol.	10 "
Water, to make.	100 "

For one gallon, 8 ounces of alum and 16 ounces of alcohol will be required.

If powdered alum is not obtainable, crush the crystals and dissolve as directed in No. 5.

For the most successful treatment, it is desirable to have the fruit sound, unbruised and not over-ripe when placed in the fluid. When practicable, the fruit should be left on the stalk or branch, the whole being so supported or suspended in the bottle that the fruit is not subjected to any undue pressure. Sufficient fluid should be used to completely cover the fruit. It is well to hermetically seal the stopper with melted paraffin and to keep the bottles of preserved fruit in a cool, darkened room.

RECOMMENDATIONS.

In the following paragraphs, the fluids are indicated that have proven the best preservatives with the various fruits under trial.

Apples and Crabs:—

Red: No. 2; the best fluid in the larger number of tests.

No. 1 has also proved effective for many varieties.

Green and Russet: No. 3.

White and Yellow: No. 4. This solution while in most respects quite satisfactory, is apt to give the fruit an unnatural paleness.

No. 2. A fairly satisfactory fluid.

Beans in Pod:—

Green: No. 5; this is undoubtedly the best fluid.

No. 1 may be used for short periods of preservation.

Yellow or Wax: No. 3 has given the best results.

No. 4; can be used but bleaches rather excessively.

Currants:—

Black: No. 1 and No. 2. Both are fairly satisfactory, the preference perhaps being with No. 1. Owing to the large amount of colouring matter extracted at the outset from this fruit, the fluid should be changed, say at the expiration of two or three weeks.

Red: No. 3, closely followed by No. 2, are successful preservatives for the fruit.

White: No. 2 and 3 are almost equally satisfactory.

Gooseberries:—

No. 5; this fluid has given very good results—incomparably better than any of the other solutions under investigation.

Grapes:—

Black: No. 1 is satisfactory and excellent.

Red: No. 3 is probably the best.

No. 1 (with peroxide of hydrogen) and No. 2 have been used successfully.

White: (green) No. 2 and 3. Neither of these has proven very satisfactory, but No. 2 seems to be better.

Peas in Pod:—

No. 5; by far the best.

No. 3 has been used with some success for short periods.

Plums:—

Our experience in preserving this fruit has been very limited, but fluid No. 2 has been used with fair success.

Raspberries:—

Red and Purple: A very difficult fruit to preserve in its natural form and colour.

No. 6. This is the best of the many fluids tried; by an occasional change of solution, this preservative gives fairly good results.

White: No. 2.

Strawberries:—

No. 1; this fluid, both with and without peroxide, will preserve the fruit with much of its natural colour. No other fluid among those under experiment has proven at all satisfactory for this fruit.

Tomatoes:—

No. 2 has given fairly satisfactory results.